The Next Step

Using Longitudinal Data Systems To Improve Student Success

DATA QUALITY CAMPAIGN

Using Data To Improve Student Achievement

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The Data Quality Campaign is a national, collaborative effort to encourage and support state policymakers to improve the availability and use of high-quality education data to improve student achievement. The campaign will provide tools and resources that will help states implement and use longitudinal data systems, while providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focused on improving data quality, access and use.

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Contents

Moving from Collecting Data for Compliance to Using Data for Continuous Improvement **2**

Changing Culture and Maximizing Investments in Data **5**

Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies 7

- Link state K–12 data systems with early learning, postsecondary education, workforce, social services and other critical state agency data systems
- Create stable, sustained support for robust state longitudinal data systems
- Develop governance structures to guide data collection, sharing and use
- Build state data repositories (e.g., data warehouses) that integrate student, staff, financial and facility data

Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement 11

- Implement systems to provide all stakeholders timely access to the information they need while protecting student privacy
- Create progress reports with individual student data that provide information educators, parents and students can use to improve student performance
- Create reports that include longitudinal statistics on school systems and groups of students to guide school-, district- and state-level improvement efforts

Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking 14

- Develop a purposeful research agenda and collaborate with universities, researchers and intermediary groups to explore the data for useful information
- Implement policies and promote practices, including professional development and credentialing, to ensure that educators know how to access, analyze and use data appropriately
- Promote strategies to raise awareness of available data and ensure that all key stakeholders, including state policymakers, know how to access, analyze and use the information

Implications for Policymakers To Ensure Data Can Be Accessed, Shared and Used **16**

Moving from Collecting Data for Compliance to Using Data for Continuous Improvement

Faced with the need to create a competitive workforce and dramatically improve the quality of America's education system, states have embraced an aggressive policy agenda to better prepare students for postsecondary education and careers. To inform this agenda, states also have made enormous progress over the past three years on developing robust student-level longitudinal data systems that can track individual student progress over time, from prekindergarten through 12th grade and into postsecondary education. These systems provide better information for policymakers and educators about student and system performance at the school, district and state levels.

Creating state longitudinal data systems and having the information to answer key questions about performance is a vital first step, but collecting data alone will not lead to continuous improvement and, ultimately, student success. States also must have policies and practices in place so that stakeholders throughout the education system can have access to, understand and be able to use the information effectively.

Changing the culture around data use

Using the information from state longitudinal data systems for continuous improvement requires a cultural shift. Until now, most states have collected data only for accountability and compliance with reporting requirements. Accountability often has been associated with negative consequences, and data were perceived as the tool for imposing those consequences.

But with longitudinal data systems, key stakeholders — including governors, legislators, chief state school officers, school board members, district and school administrators, early learning administrators, postsecondary and K–12 educators, state higher education executives, parents, students, and advocacy/improvement/research organizations — have the data for the first time to determine not just whether an individual student's performance is improving but also how and why. They can use the information proactively to alter policies, programs and practices to spur continuous improvement at every level — from individual students to the system as a whole — rather than reactively to impose consequences for previous performance. Greater access to and use of data lead to increased data quality as well. When data were just reported up the chain of command to check the "compliance box," there was little incentive or reason to be concerned about the quality of the data. Now everyone has a vested interest in the accuracy of the data, especially because information is reported back to local schools to be used.

Stakeholders need the ability to use the same data in different ways. A parent needs to look at performance data to see whether her child is on track to master the content for the student's grade level and, ultimately, whether her child will be prepared for the demands of the workplace. A teacher needs to be able to view performance data for each student in his class but also aggregate data to analyze trends, determine which content needs to be reinforced and decide how to alter his teaching methods accordingly. A policymaker must be able to understand the analysis of this aggregate data to be able to answer questions such as: Which schools are producing the greatest amount of student growth? What can we learn from those programs? What implications does that have for resource allocation, curriculum decisions or teacher training? What do our students need to be ready for success in college?

Therefore, the most efficient and cost-effective process is to collect the information at the state level and provide users appropriate access to it. However, the vast majority of these stakeholders need guidance on what longitudinal data are, how to interpret and use the information, and how to ask questions to make decisions and help students succeed.

Removing barriers and taking action

This shift to using data for continuous improvement also requires building the political will and taking the practical steps to remove current barriers to accessing, sharing and using data.

When states have longitudinal data that can be shared, are user friendly and timely, and are tailored to users' needs, stakeholders can do more than just gather data, they can act on the information to:

- Use data for continuous improvement, rather than solely for compliance with federal and state reporting requirements;
- Better define student success with transparent, well understood and broadly accepted performance indicators;
- Accurately forecast a student's readiness for key transitions from preschool through high school and into college and careers and take action as needed;
- Answer day-to-day questions and evaluate issues such as strengths and weaknesses identified by formative assessments, intervention effectiveness, and the relationships among attendance, mobility and standardized test scores; and
- Allocate resources (e.g., time, money and staff) based on returns on investment.

Moving forward

Over the next three years, the Data Quality Campaign's (DQC) partners will continue to provide support and information about building robust student-level longitudinal data systems via the 10 essential elements. But the campaign's primary focus now shifts toward helping states identify and put in place the necessary policies and practices so that key stakeholders actually use longitudinal data to help students succeed. Even states that have not finished building their longitudinal data systems have a wealth of new information that they can use right away.

In addition to longitudinal data, states need to collect, analyze and use many other types of data to effectively manage schools and school systems. For example, how much time does it take for a high-performing school system to hire a new teacher? Are the most successful schools more likely to be located in districts that allocate more of their money toward instruction than are less successful schools? This type of process management information, combined with information on student performance from the state longitudinal data system, can guide important decisions that have an impact on student achievement. While the DQC hopes to draw attention over the next three years to the need for states and districts to promote the use of process management data, the campaign will continue to focus on longitudinal data and data systems.

Similarly, many of the issues discussed in this paper also apply to districts. As part of its work in this phase of the campaign, the DQC plans to help states and districts work together to ensure that state systems meet district needs. However, this paper focuses on the 10 actions that states should take to ensure that all stakeholders use state longitudinal data effectively for continuous improvement. Future DQC surveys will include questions to assess state progress on taking these actions.

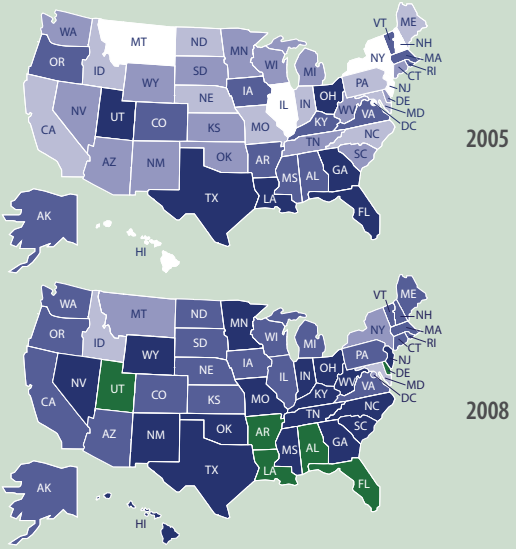
Data Should Be Used by All Stakeholders

Following are examples of how stakeholders throughout the education system can use longitudinal data to improve student performance:

- **Governors and legislators** — to create policies that support continuous improvement and to allocate state resources;
- **Chief state school officers** — to shape education policies and programs, allocate state education agency resources to help districts, and create professional development around proper use of data;
- **School board members (state and local)** — to evaluate effective programs, textbooks and interventions;
- **Postsecondary educators and state higher education executives** — to identify necessary courses, effective transition strategies and staffing resources to meet the needs of incoming students;
- **Early childhood learning administrators** — to evaluate how their programs prepare children for success in elementary schools;
- **District administrators** — to improve curriculum and practice both systemically and in specific schools, allocate teacher and staff resources, and provide professional development opportunities;
- **School administrators** — to guide staff and time resources, teaching, course assignments, and testing;
- **Teachers** — to create individual student education plans;
- **Parents and students** — to monitor academic progress and to inform decisions about courses and programs;
- **Advocacy/improvement/research organizations** — to assess the impact of policies, programs and practices; and
- **Other public agencies serving children** — to understand the relationship between their services and educational outcomes.

States Make Remarkable Progress on Building Data Systems

Since the Data Quality Campaign (DQC) launched in 2005, states have made remarkable progress in developing longitudinal data systems that can track student progress over time, from prekindergarten through 12th grade and into postsecondary education. In 2005, no state had all 10 essential elements of a high-quality longitudinal data system. In 2008, six states had all 10 elements, and 48 had five or more elements in place. Within the next three years, 47 states plan to have eight or more elements.



By gathering these data, states now collect the information needed to answer vital questions, such as:

- Which schools produce the strongest academic growth for their students? *(39 states collect the data needed to answer this question, up from 21 in 2005)*
- What achievement levels in middle school indicate that a student is on track to succeed in rigorous courses in high school? *(12 states, up from 3 in 2005)*
- What is the state's graduation rate, according to the calculation agreed to in the 2005 National Governors Association compact? *(42 states, up from 14 in 2005)*
- What high school performance indicators (e.g., enrollment in rigorous courses or performance on state tests) are the best predictors of students' success in college or the workplace? *(10 states, up from 2 in 2005)*
- What percentage of high school graduates take remedial courses in college? *(27 states, up from 8 in 2005)*
- Which teacher preparation programs produce the graduates whose students have the strongest academic growth? *(16 states, up from 5 in 2005)*

Each year, the DQC surveys all 50 states and the District of Columbia to assess states' progress toward implementing the 10 essential elements of a longitudinal data system. To see complete survey results, go to www.DataQualityCampaign.org.

10 Essential Elements of a Longitudinal Data System

The DQC has identified 10 essential elements that states must include to build a highly effective longitudinal data system:

1. A unique statewide student identifier that connects student data across key databases across years *(48 states report having this element, up from 36 in 2005)*
2. Student-level enrollment, demographic and program participation information *(49 states, up from 38 in 2005)*
3. The ability to match individual students' test records from year to year to measure academic growth *(48 states, up from 32 in 2005)*
4. Information on untested students and the reasons they were not tested *(41 states, up from 25 in 2005)*
5. A teacher identifier system with the ability to match teachers to students *(21 states, up from 13 in 2005)*
6. Student-level transcript information, including information on courses completed and grades earned *(17 states, up from 7 in 2005)*
7. Student-level college readiness test scores *(29 states, up from 7 in 2005)*
8. Student-level graduation and dropout data *(50 states, up from 34 in 2005)*
9. The ability to match student records between the P–12 and postsecondary systems *(28 states, up from 12 in 2005)*
10. A state data audit system assessing data quality, validity and reliability *(45 states, up from 19 in 2005)*

Changing Culture and Maximizing Investments in Data

Now that the longitudinal data are collected, states must take action so that key stakeholders can use the information to improve student performance at the school and classroom levels and also provide feedback to the state on data they need to make the improvement continuous.

Historically, state education agencies (SEAs) have served as conduits of K–12 data — they collected specific pieces of data from local education agencies (school districts) and passed them to the U.S. Department of Education as required by law, or they produced state-mandated reports. Then, as states built K–12 longitudinal data systems, SEAs set up and implemented the systems, with support from state policymakers.

The SEA can support efforts to use these data by providing key information and tools — such as creating central data repositories to house district data — to reduce financial and time burdens on districts and schools. However, the SEA also needs to work in partnership with districts to ensure that state systems are built with district needs in mind.

The SEA is not the only state agency with a role to play. Agencies that deal with human capital issues — such as early learning, workforce development, K–12 education and postsecondary education — are all working toward the same goal of preparing individuals for success in an increasingly knowledge-based economy and world, and they all have their own data systems. As such, these agencies must work together, and their data systems need to be able to exchange information.

Policymakers and educators also need to ask themselves what they are doing to change the culture around data use and make it feasible for stakeholders at all levels to use data daily. These questions include:

- Have our expectations about how data will be used in schools and classrooms changed? How well do we communicate those expectations?
- Are there ways we can better facilitate data use? Technology investments? Training?
- Do teachers have the autonomy and authority to change practices and the way they use their time as a result of having access to better information?
- How are school and district administrators using data to allocate resources? How are they sharing the data and communicating expectations with teachers?
- How can education agencies across multiple levels work together to develop and support common achievement goals?
- Do we need more and different data to inform decisions?
- What is the process for changing which data are collected if key policy questions cannot be answered? How do we work with the SEA to ensure the appropriate data are collected?
- How can I support data use in my day-to-day activities and in my institution?

More Than IT

To date, information technology (IT) staff — including chief information officers and state and local data managers — have provided vital leadership in developing state longitudinal data systems, but now data users must take on a more prominent role.

Building, maintaining and effectively using data systems is not solely an IT project. Educators and program staff (e.g., special education, bilingual, Title I) are the owners of the data; they are responsible for their data and must take a leadership role in terms of knowing what data they need and how the information is used. They need to advise the IT team on what data should be collected, how the data should be defined, how often they need to be collected, and how they need to be analyzed and reported. IT staff are responsible for addressing data owners' needs and maintaining the security and integrity of the data. Just as we do not ask construction workers to turn our houses into livable homes, we cannot ask IT staff to be solely responsible for turning large databases into robust information systems.

10 State Actions To Ensure Effective Data Use

The DQC has identified three overarching imperatives for changing the culture around data use and maximizing states' investments in longitudinal data systems. Within these imperatives, the DQC also has identified 10 actions states need to take to ensure key stakeholders use the data effectively.

Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies.

1. Link state K–12 data systems with early learning, postsecondary education, workforce, social services and other critical state agency data systems.
2. Create stable, sustained support for robust state longitudinal data systems.
3. Develop governance structures to guide data collection, sharing and use.
4. Build state data repositories (e.g., data warehouses) that integrate student, staff, financial and facility data.

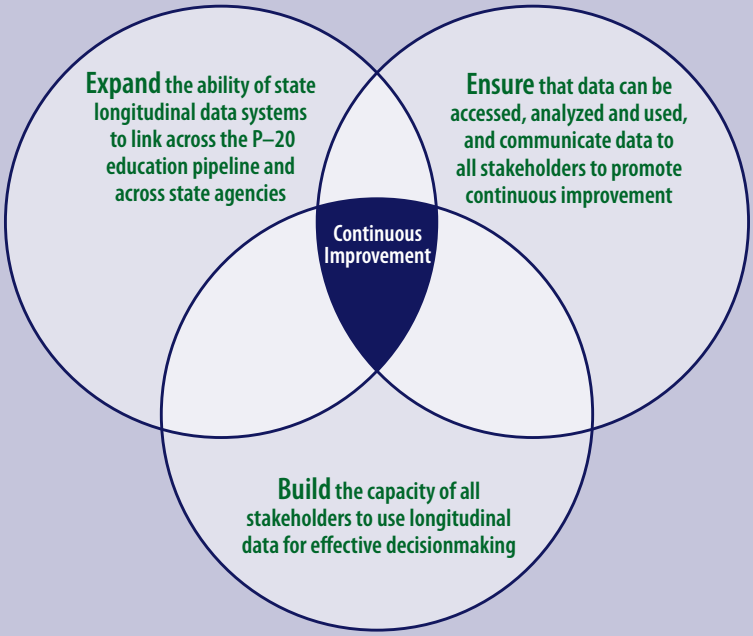
Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement.

5. Implement systems to provide all stakeholders timely access to the information they need while protecting student privacy.
6. Create progress reports with individual student data that provide information educators, parents and students can use to improve student performance.
7. Create reports that include longitudinal statistics on school systems and groups of students to guide school-, district- and state-level improvement efforts.

Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking.

8. Develop a purposeful research agenda and collaborate with universities, researchers and intermediary groups to explore the data for useful information.
9. Implement policies and promote practices, including professional development and credentialing, to ensure that educators know how to access, analyze and use data appropriately.
10. Promote strategies to raise awareness of available data and ensure that all key stakeholders, including state policymakers, know how to access, analyze and use the information.

Changing the Culture around Data Use

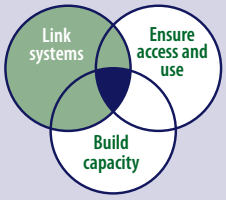


Priorities will necessarily vary across states, but the DQC has identified three overarching imperatives for changing the culture around data use and maximizing states' infrastructure investments:

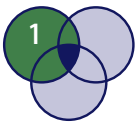
- Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies;
- Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement; and
- Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking.

Within these three imperatives are *10 actions* that states should take to change how data are used to make state and local decisions to improve student performance. This list is not exhaustive — it is designed to push states beyond their current practices and policies. Just as no SEA had all 10 essential elements in 2005, it is unlikely that any state has developed a process for fully using its longitudinal data. Some of the examples provided show how states are starting to use data or what they are considering; not all examples represent long-term or fully developed processes.

Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies



Even though states have made remarkable progress on building longitudinal data systems over the past three years, most are still in the process of developing them. As states continue this work, they also need to consider how to expand the system and increase its effectiveness. The DQC's 10 essential elements and the 10 state actions described in this paper focus primarily on P–12 systems, but for policymakers, educators, parents and students to have the information they need to truly improve student performance, these data systems must be built to exchange information across traditional barriers, such as with postsecondary, workforce, early learning, health, social services and juvenile justice systems. This information sharing must be possible both within and among districts and states. To support this sharing, states must:



Link state K–12 data systems with early learning, postsecondary education, workforce, social services and other critical state agency data systems

College and career readiness is quickly becoming the expectation for high school graduates, but ensuring that students have the preparation they need does not begin in high school. The only way to evaluate whether students, schools and districts are meeting the college and career readiness expectation is to collect and analyze student-level data across the P–20 spectrum to provide feedback on readiness and enable continuous improvement. Ensuring that student information can be linked and shared back and forth among early learning, K–12 and postsecondary education and workforce is critical.

However, academic data and performance histories alone cannot provide a complete picture of the challenges students face and the programs and services they take part in outside the classroom that affect achievement. For example, students who are in foster care programs may change homes and, in turn, schools one to two times a year, which can negatively affect their academic performance. Social services agencies and educational institutions need to share data about individual students to ensure that students receive services for which they are qualified and to seamlessly transfer records and allow prompt school and program enrollment. In addition, researchers need access to this information to identify and analyze effective interventions and programs for students. (For more information on connecting data systems, go to www.DataQualityCampaign.org.)

Connecting data seamlessly across various educational systems requires developing interoperable data standards at the start and using them throughout the entire process. Just as it is more efficient and less expensive if the people building your house — carpenters, brick layers, electricians, plumbers, etc. — work from the same blueprints and use the same measurements, open, technical data standards help increase data quality, improve services and reduce cost. Policymakers and IT leaders must therefore ensure that national data standards and the organizations that facilitate their development are supported. (For more information on interoperability, go to www.DataQualityCampaign.org.)

Sharing P–20 Data in Minnesota

To meet the governor's goal of connecting the K–12 and postsecondary systems, Minnesota worked through the P–16 Education Partnership, a voluntary advisory group tasked with improving the student transition from P–12 to postsecondary education. The full P–16 Education Partnership, including private and public postsecondary systems, teachers unions, the Career College Association, and the Minnesota Department of Education, determined the questions that this data sharing would answer. The P–16 Student Identification System Working Group was developed to help determine which P–12 and higher education data should be collected and potentially shared to provide these answers. Many of the elements the working group identified during its two years of collaborative review, such as race and ethnicity, already were being collected; others, such as participation in college readiness programs and completion of college-level courses, were not. The partnership's proposal to use the existing K–12 student identifier to follow students into postsecondary systems via their transcripts was codified into law in 2008. For more information, see www.DataQualityCampaign.org.

Interoperability in Connecticut

There is a growing commitment across Connecticut to develop interoperability among agencies to improve data-driven and cross-agency decisionmaking. The Connecticut General Assembly has required that the Early Childhood Education Cabinet propose data interoperability recommendations for 2009. Work is under way for an Early Childhood Information System (ECIS) based on unique child and program identifiers that will capture information on all prekindergarten programs that receive state funding and be able to follow individual students into elementary education. In addition, the departments of Labor, Higher Education and K–12 Education have worked together to ensure data on postsecondary education, training and employment can be exchanged, matched and linked to better serve individuals, provide state policymakers with key information on education and labor market outcomes, and improve programs and services throughout the education pipeline. See the DQC Web site for more on the state's ECIS and efforts to link data systems across higher education and labor.

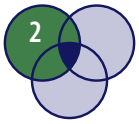
Although linking and using these data systems are important for policy, management and instructional decisions that focus on individual student success, these needs must be balanced with appropriate protections for the privacy of student records. In particular, the federal Family Educational Rights and Privacy Act (FERPA) imposes limits on the disclosure of student records by educational agencies and institutions that receive funds from the U.S. Department of Education.

Since FERPA was enacted, the state role around data collection, sharing and use has expanded, which has raised new issues about how states' sharing and use of longitudinal data relates to student privacy protections. The DQC has created a resource center (www.DataQualityCampaign.org) to help states ensure privacy while supporting the sharing, linking and use of data to improve student achievement.

To make it possible for appropriate entities to share these critical data, state actions include, but are not limited to:

- Defining the purposes for linking and sharing data across agencies;
- Reviewing and clarifying state privacy laws (including regulations and guidelines) on the role of the longitudinal data system;
- Authorizing the data system through state law to be able to share data among state agencies;
- Clarifying roles and responsibilities for protecting individual privacy;
- Promoting cross-system interoperability, including the development of common standards for data architecture and definitions; and
- Developing agreements between K–12, postsecondary and other agencies to match data records.

(See www.DataQualityCampaign.org for a complete list of state actions to ensure individual privacy.)



Create stable, sustained support for robust state longitudinal data systems

Although many policymakers have viewed the building of a statewide longitudinal data system as a one-time expense, it is not. As with other critical infrastructure, the longitudinal data system will require maintenance and enhancements over time. In addition, as state-of-the-art technology becomes available, it needs to be incorporated in state data systems to ensure that limited resources — both money and staff time — are allocated effectively.

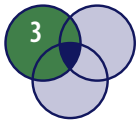
A key factor for ensuring that state longitudinal data systems remain viable over time is building demand for the information among all users. Users who understand the value of and actively seek out the information will provide the vocal support and feedback to ensure the systems are sustained and remain useful.

Therefore, states need to:

- Make support and resources for educational data systems a standard line item in state budgets and protect them from cuts, even in a difficult economy, and
- Promote the use of information from state longitudinal data systems to build demand.

California's Legislative Support for Longitudinal Data Systems

The California legislature has mandated that the SEA build and sustain three critical data systems to ensure that all stakeholders have access to the information necessary to improve education in the state: the California School Information Services, the California Longitudinal Pupil Achievement Data System and the California Longitudinal Teacher Integrated Data Education System. Several other states also are developing legislation to codify, authorize and support their state longitudinal data systems. Visit the DQC Web site (www.DataQualityCampaign.org) to see a case study of the California legislation and for links to all of the state legislation dealing with state longitudinal data systems.



Develop governance structures to guide data collection, sharing and use

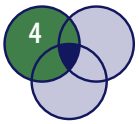
Traditionally, organizations within the education sector — as well as other state agencies — have worked in silos, with each developing its own data systems and policies and practices for collecting and using the information. As states work to link the state longitudinal data system with other systems, setting up governance structures will be essential.

Data governance is one of the most underdeveloped but critical aspects of data management. Through data governance, organizations define the roles and responsibilities needed to institutionalize their commitment to data quality and use. Without a data governance strategy, there is no clear ownership of the data, no clear business processes for collecting and reporting data, and no accountability for data quality. Examples of issues to address in data governance policies include, but are not limited to:

- Establishing Memoranda of Understanding outlining what data are shared and how, where they will be stored, how often they will be updated, who will conduct what analyses, how privacy will be protected, etc.;
- Creating a data sharing committee with representatives from all state agencies that meets regularly to oversee the governance policy and structure;
- Engaging support from state-level policymakers to share data across agencies; and
- Developing common standards (e.g., ensuring "retention" means the same thing in P–12 as in postsecondary, establishing interoperability standards and specifications, etc.).

Tennessee's Data Governance Structure

Tennessee officials spent the first year of their efforts to build a longitudinal data system on establishing a detailed data governance structure. The state did not spend any money on software or hardware until the roles, responsibilities and data ownership processes were developed and all program areas agreed to them. For more information, see www.DataQualityCampaign.org.



Build state data repositories (e.g., data warehouses) that integrate student, staff, financial and facility data

State educational data warehouses are essentially storage facilities, in which detailed and reliable educational data from several areas that affect student performance are stored and integrated. These data then can be used to produce a variety of reports that can be made readily available to a wide range of users, from the general public to individual teachers (see State Actions 6 and 7). Because several years of data are integrated from many separate silos, these data can be analyzed and used in ways never before possible. For example, in states that are able to connect teacher and student data, analyses can be conducted on which teachers best serve different groups of students, thereby informing teacher assignments. (For more information, see www.DataQualityCampaign.org.)

New Mexico's Data Warehouse

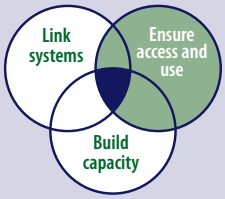
New Mexico has implemented its data warehouse, which fully integrates student, staff, course and assessment data to strengthen student performance, influence decisionmaking, identify specific areas for improvement, examine relationships between cost and effectiveness, and improve administrative time management and mandated reporting. The SEA is sharing data with other state agencies to inform parents and citizens about student progress, school quality, and college and career readiness options. For more information, see www.DataQualityCampaign.org.

However, the need to share data (State Action 1 on page 8) does not mean that all data have to be maintained in a single warehouse. The systems only need to be connected and able to share the necessary data points with appropriate technology.

To create these data repositories, states need to:

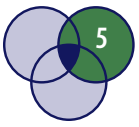
- Identify project scope, build strong project plans and stick to the plans;
- Generate realistic estimates of time and cost;
- Include representatives of all user groups in the planning process; and
- Address security issues up front.

Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement



As states have developed longitudinal data systems over the past three years, they have dramatically increased the amount of data they collect. However, most stakeholders still are not able to access the information. They are forced to rely on state, district and school report cards — which may or may not be available online and provide only a limited amount of data — to provide a snapshot of state, district or school success. Rarely is this information used to inform their daily activities or decisions because it is not timely and it is not in a form that is relevant or useful to various stakeholder audiences.

States need to change how data are accessed and analyzed, and they need to communicate the information differently to ensure that educators (classroom, school, district, higher education and early learning) and state and local policymakers can use it regularly to assess performance; alter practice; and allocate resources, time, money, staff and tools (e.g., computers, equipment, buildings and supplies) for continuous improvement. Parents, students and others also need to be able to access and use these data to improve student performance. Without a concerted effort among all stakeholders in the state to change the way the education "business" is conducted, the desired improvement in student performance is unlikely. To support this change, states must:



Implement systems to provide all stakeholders timely access to the information they need while protecting student privacy

Data are only useful if people are able to access, understand and use them. If they do not have timely and ready access to academic and performance information, stakeholders are forced to make decisions based on anecdote, experience or instinct.

Yet although stakeholders must have access to data to inform their decisions, everyone does not need access to all data, nor does everyone involved in education need to suddenly become a statistician. Rather, teachers need to teach, principals to lead, parents to ask questions and make decisions in the best interest of their children, and policymakers to allocate resources.

At the same time, states must ensure that confidential student and teacher information remains private. Creating systems that provide access based on the role of the data user enables the state to share appropriate data with each group of stakeholders while protecting individual privacy.

For example, school, district and state performance statistics may be available to the general public, but a student's parents, teachers and administrators may be the only people able to view confidential information about that student. The information available also may vary depending on the role of the person accessing the data — a parent may see information such as a lunchroom account balance; the teacher may not.

In general, the key distinction between roles is based on whether or not an individual has a reason to be allowed access to confidential student and teacher information. Examples of access include:

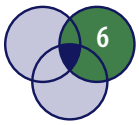
- Students have access to their own academic and performance history;
- Parents have access to their own children's data;
- Teachers have access to individual student data;
- Principals and district administrators have access to student-level data for the students in their schools;
- Researchers with research contracts with the SEA have access to the individual student data specified in the contract; and
- Everyone, including students, teachers, administrators, parents, state board of education members, legislators, governors, researchers and members of the general public, may view aggregate data for schools, programs, districts and the state.

States must develop the system and procedures to allow or prevent access to the information so that privacy can be protected without restricting users' legitimate access to information (see section on protecting privacy under State Action 1). Regarding access, states particularly need to:

- Develop and issue guidelines or regulations that address the ability of the state longitudinal data system to be part of data sharing agreements with other agencies; and
- Make clear the procedures and expectations to access and protect state longitudinal data for research and improvement purposes.

Arkansas' Role-Based Access

Arkansas has built a Web-based reporting system that allows different stakeholders to view different information based on their need and level of responsibility for students. Current roles defined in the system include teachers; counselor/registrars; school administrators, district administrator; district system administrator; and key SEA staff. Each individual is provided with a unique account that requires authentication when signing onto the system and determines which reports — student, classroom, grade or school level — he or she can access. Arkansas also is working to add parent and student access as part of the next phase of the system. For more information, see www.DataQualityCampaign.org.



Create progress reports with individual student data that provide information educators, parents and students can use to improve student performance

Currently, most accountability reports rely on a single high-stakes test score to determine whether students are on track to succeed. Longitudinal data enrich the information available to parents and teachers by providing information on a student's academic history, including courses taken, grades received, and scores on formative and statewide assessments. To help educators, parents and students interpret and use the new information, states should develop a variety of reports that analyze the data in different ways. Some types of reports the state might provide include:

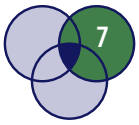
- **Diagnostic reports** on individual students to guide efforts by teachers and parents to provide timely and effective help to students and to make sure that instruction challenges them appropriately.
- **Early warning system reports** that provide information on whether individual students are at risk and in need of extra assistance. These reports can make it possible to address student academic and behavioral difficulties as early as possible.
- **Readiness reports** to identify whether and to what extent each elementary, middle and high school student is on track for college and career readiness by high school graduation. These reports can focus both on a student's current performance level and rate of academic growth.
- **Predictive reports** on individual students that analyze past performance to see whether students are likely to reach a performance goal.

While protecting student and teacher privacy by limiting access to appropriate users (see State Action 5), the state should place these reports online so they are readily available. At the same time, states should provide more advanced users access to the data so they can perform their own analyses to meet their needs. These reports also need to include information such as how terms are defined, how calculations were made and when the data were collected to help users understand the context for the reports.

With a state data warehouse system and a full set of reports available online, educators, parents and students with the appropriate access would be able to view and use all of the relevant diagnostic, early warning and readiness-related information from a student's academic record, even if the student has just changed schools or districts. Having the state put this system together, as opposed to school districts, also will ensure that all educators, parents and students statewide — even those in small and less well-financed districts — have access to the information, and it is more cost effective than creating the same system multiple times at the district level.

Louisiana's Dropout Early Warning System

Louisiana piloted its Dropout Early Warning System in 2008. The indicators used in the pilot include attendance, grade point average, discipline data and student age to identify students who are likely to drop out of school so that schools can work to keep those students in school and increase the chances that they will graduate. Pilot schools were required to develop an intervention plan. For more information, see the DQC's case study (www.DataQualityCampaign.org).



Create reports that include longitudinal statistics on school systems and groups of students to guide school-, district- and state-level improvement efforts

All stakeholders need information on school, district and state performance to gauge progress and make decisions to support continuous improvement at all education levels. The state should take the lead on creating and providing access to a variety of reports that analyze performance and answer key questions. These reports should include longitudinal statistics, which provide valuable information about the effectiveness of schools, programs, policies and interventions for students who start out at different academic levels. They also need to include information on definitions, calculations and other details to help users understand the context for the data. In addition, states should provide more advanced users access to the longitudinal statistics separate from the reports.

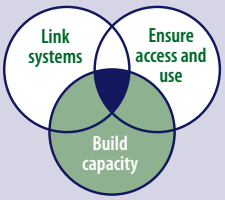
Routinely creating these reports and making them readily available online will minimize requests for ad hoc analysis, saving states valuable staff time and resources. Examples of the kinds of longitudinal statistics and reports states can provide districts, schools and advocacy/improvement/research organizations include:

- **Feedback reports from higher education to K–12 schools and districts, from high schools to middle schools, and from middle schools to elementary schools.** How did the school's graduates perform in the next level of education? How was this related to their academic levels when they entered and left the school?
- **Information on student academic performance and growth disaggregated by students' prior achievement levels.** For example, what percentage of students who entered middle school and high school at low performance levels are growing fast enough to get them on track to college and career readiness by the time they graduate from their current schools?
- **Longitudinal graduation rates disaggregated by prior achievement and other suitable at-risk indicators.** Are some high schools much more effective than others in getting at-risk students to graduate? How many of these students graduate college and career ready?
- **Statistics on the relationship between and among course completion and course grades, exam results, and later enrollment and success in college.** What percentage of students receiving credit for various courses in the school or district later met benchmarks on college readiness exams, enrolled in college, and graduated from college with a degree or certificate? Does course completion predict later success only if the student earns good grades?

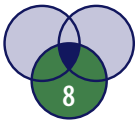
Kentucky's Feedback Reports

The Kentucky Council on Postsecondary Education has developed a series of reports that the state shares with high schools to show how their graduates ultimately perform in Kentucky postsecondary education. In many states, higher education agencies provide high schools with reams of paper reports about subsequent student performance in higher education. Kentucky officials developed succinct, easy-to-read and easy-to-interpret reports that are now used by educators and policymakers. For more information, see the DQC's January 2008 quarterly meeting and issue brief (www.DataQualityCampaign.org).

Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking



Most stakeholders who need to use data to understand and improve student performance are not trained statisticians. Policymakers, school board members, educators and administrators, business and community leaders, parents, advocacy and school improvement organization staff, journalists, and others often need additional support to learn how to uncover the context for the data, such as how the data were collected, when the data were collected, what policies were in place that might have affected the data, etc. Therefore, in addition to providing access, tools and policies to enable stakeholders to use the data, the state also must:



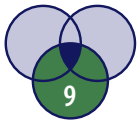
Develop a purposeful research agenda and collaborate with universities, researchers and intermediary groups to explore the data for useful information

To make full use of the longitudinal data they are collecting, states need people with high-level analytical skills and research training to mine the data and answer the multitude of policy and evaluation questions. Few states have the resources to add researchers and analysts to their staff; however, all states have access to public and private universities and other organizations that conduct educational research and/or serve as advocacy organizations that can use and communicate the data and data analysis as part of their action agendas. Strategic partnerships with these organizations could inform decisionmaking and improve student performance. Key research topics and advocacy areas include:

- Effectiveness of teacher preparation;
- Differences between high-performing schools and districts and average or low-performing schools and districts;
- Educational background of students who experience the least difficulty in transitioning to college; and
- Effectiveness of dropout prevention programs.

Kansas' Research Consortium

Kansas has launched a research consortium in partnership with the University of Kansas, Kansas State University and the Kansas Board of Regents to develop and implement a statewide agenda of key research topics, develop a process for using data to improve instruction and student achievement, and build a network of scholars that shape education as well as deliver it. For more information, see www.DataQualityCampaign.org.



Implement policies and promote practices, including professional development and credentialing, to ensure that educators know how to access, analyze and use data appropriately

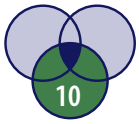
Just as collecting the data alone is not enough to improve student performance, making the data available to educators is not sufficient to drive data use. If teachers and principals have not been trained to access, analyze, interpret and use the information, the new system likely will not lead to the desired changes in student performance. The state should take the lead in setting up policies and promoting practices that will lead to educators' having a better understanding of how to use the data to improve student performance, including:

- Requiring educators seeking certification or certification upgrades to receive training and show competence in the analysis, interpretation and use of data;
- Promoting professional development and tutorials that are available in multiple formats in a variety of venues, including online tutorials related to using existing reports;

- Providing incentives for educators to take part in training and other professional development;
- Promoting best practice research on data usage; and
- Encouraging districts to ensure educators have the technological tools necessary for accessing data, time for discussions with other teachers, and autonomy to change the teaching process (instructional strategies, tools, use of time) based on the results of data analysis.

Oregon's Professional Development Program

Oregon has developed two primary data system training efforts to date. The first training program is aimed at instructional professional development, while the second is more of a technical strand for district data submitters. For more information, see www.DataQualityCampaign.org.



Promote strategies to raise awareness of available data and ensure that all key stakeholders, including state policymakers, know how to access, analyze and use the information

Educators will be the primary users of data to improve student performance, but other stakeholders also need to know what data are available and be able to access, interpret and use data effectively. Without access to timely and accurate data, state policymakers are flying blind when weighing the potential impact of new legislation in terms of the costs, return on investment, and effects on students and schools. School board members at the state and district levels also need access to timely and accurate information to make informed decisions.

However, access alone is not sufficient to ensure that data are used and interpreted correctly. Very few people have had access to longitudinal statistics in education; consequently, few will automatically know how to use the new information effectively. The state should take the lead in:

- Promoting training on data use for parents, students, school board members, state executive and legislative staff, SEA personnel, education writers and journalists, community leaders, and the general public; and
- Ensuring that training is provided in multiple formats, including online tutorials, easy-to-access documentation, webinars, courses offered in conjunction with local schools and community colleges, etc.

Florida's Sunshine Connections

Florida has developed a Web-based portal that provides legislators with access to a variety of reports about how schools in their legislative districts are performing. Florida Department of Education staff members have worked closely with legislative staff over the years to make sure that the data are understood and used appropriately, and these reports have been based on feedback and questions from legislators to meet their needs when evaluating policy. For more information, see www.DataQualityCampaign.org.

Implications for Policymakers To Ensure Data Can Be Accessed, Shared and Used

Although states have made impressive progress on implementing their longitudinal data systems, too few have taken the necessary steps to ensure that the information produced by these data systems is harnessed to inform and improve the processes and outcomes of states' education efforts. This shift requires building the political will and taking the practical steps to remove current barriers to accessing, sharing and using these data.

Following is an overview of priority areas for action by federal and state policy leaders (the executive branch, Congress, governors, state legislators, state boards of education, chief state school officers and others). Effective, action-oriented data systems are as critical to a state's education infrastructure as bridges are to the transportation infrastructure. The data systems must remain a priority for federal, state and local policymakers.

Actions for federal and state policymakers include:

Expand the ability of state longitudinal data systems to link across the P–20 education pipeline and across state agencies.

- ☐ Ensure that there is a line item in the state budget for the maintenance and growth of these systems;
- ☐ Clarify state and federal policies that ensure the protection of personally identifiable information while also authorizing the state longitudinal data system to collect, share and link data from multiple systems for the purposes of evaluation and continuous improvement;
- ☐ Create a governance structure and implement the necessary agreements (political, legal and practical) among various agencies to ensure data can be shared across and among P–12 and postsecondary systems and other critical data systems in ways that protect data quality, ensure transparency and promote efficiency;
- ☐ Emphasize interoperability across systems and states (e.g., standard definitions, specifications); and
- ☐ Create the political demand for sharing data — use the bully pulpit to talk about the need for information to follow individual students, even across state and district lines, and to break down the traditional silos.

Ensure that data can be accessed, analyzed and used, and communicate data to all stakeholders to promote continuous improvement.

- ☐ Ensure all stakeholders have appropriate access to longitudinal data;
- ☐ Promote the effective and timely presentation of this information to advance its use; and
- ☐ Support the development of early warning systems, growth models and predictive analysis tools that use longitudinal student data to inform and improve teaching and learning.

Build the capacity of all stakeholders to use longitudinal data for effective decisionmaking.

- ☐ Emphasize the role of robust data systems in the school improvement planning process and professional development activities;
- ☐ Change teacher certification requirements and offer incentives to ensure that teachers have facility with accessing and using data; and
- ☐ Support and invest in advances in technology to improve the efficiencies of data access, analysis and communication.

An Attainable Goal

Using valid, reliable and consistent information to drive all decisions across the education sector — a transformation that was not even conceivable a mere three years ago — is now an attainable goal. Thanks to the hard work and leadership of states and the growing national momentum behind this agenda, policymakers, educators and families increasingly have the information they need to ensure every child has the knowledge and skills to succeed.

Over the next three years, the DQC will continue to assist states in developing data systems based on the 10 essential elements and in using the information to improve student performance. To help ensure that states benefit from their infrastructure investments, the DQC will focus on two high-priority needs: building demand for the newly available information and helping state agencies assist all stakeholders in harnessing this powerful source of information.

Managing Partners of the Data Quality Campaign

Achieve, Inc.
Alliance for Excellent Education
Council of Chief State School Officers
Education Commission of the States
The Education Trust
National Association of State Boards of Education
National Association of System Heads
National Center for Educational Achievement
National Center for Higher Education Management Systems
National Governors Association Center for Best Practices
Schools Interoperability Framework Association
Standard & Poor's School Evaluation Services
State Educational Technology Directors Association
State Higher Education Executive Officers

Endorsing Partners of the Data Quality Campaign

ACT
Alliance for Quality Teaching
American Association of Colleges for Teacher Education
American Association of State Colleges and Universities
American Board for Certification of Teacher Excellence
American Youth Policy Forum
APQC
Business-Higher Education Forum
Center for Teaching Quality
College Summit
Consortium for School Networking
Educational Policy Institute
ETS
GreatSchools
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Jobs for the Future
Knowledge Alliance
League of Education Voters Foundation
Learning Point Associates
Midwestern Higher Education Compact
National Alliance for Public Charter Schools
National Association of Secondary School Principals
National Association of State Directors of Teacher Education and Certification
The National Center for Public Policy and Higher Education
National Council for Accreditation of Teacher Education
National School Boards Association
National Staff Development Council
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New England Board of Higher Education
Pathways to College Network
Postsecondary Electronic Standards Council
Pre–K Now
Roads to Success
Southern Regional Education Board
Thomas B. Fordham Institute
Western Interstate Commission for Higher Education

To join the DQC as an endorsing partner, visit www.DataQualityCampaign.org.

The Bill & Melinda Gates Foundation is the DQC´s founding funder; additional support has been provided by the Casey Family Programs, the Lumina Foundation for Education, and the Michael & Susan Dell Foundation.

Visit the Data Quality Campaign Web site (www.DataQualityCampaign.org) for more about the:

- **10 essential elements and the 10 state actions required to establish, maintain and use a quality longitudinal data system;**
- **Results of the DQC's annual update of its survey that show where your state stands on the 10 essential elements and the 10 state actions;**
- **Tools, materials, meetings and information that can aid states and interested organizations seeking to ensure increased quality, accessibility and use of data; and**
- **Information on how your organization can partner with the DQC to generate the understanding and will to build and use state longitudinal data systems.**

Visit www.SchoolDataDirect.org for information about public schools nationwide.

DATA QUALITY CAMPAIGN
Using Data To Improve Student Achievement

www.DataQualityCampaign.org